

WHAT IS CLAIMED IS:

1. A system for placing a guide member through the wall of a patient's heart so that the guide member extends through a coronary vessel and the wall of the heart into a heart chamber, the system comprising:

an introducer sized and configured for placement through a coronary vessel and the wall of a patient's heart into a heart chamber; and

a guide member sized and configured to be positioned in the introducer and placed through the coronary vessel and the heart wall into the heart chamber, the guide member having a proximal portion adapted to remain outside the heart and a distal portion adapted to be passed into and then back out of the heart chamber;

wherein the guide member is passed through the introducer and moves through the coronary vessel and the heart wall to a location within the heart chamber.

2. The system of claim 1, wherein the introducer is a hollow sleeve, the guide member is a guide wire, and the distal portion of the guide wire includes a distal end that is passed through the introducer.

3. The system of claim 1, further comprising a device adapted to remove the guide member from the heart chamber.

4. The system of claim 3, wherein the device is a snare adapted to grasp the guide member and pull the guide member out of the heart chamber.

5. The system of claim 3, wherein the distal portion of the guide member is configured to be carried out of the heart chamber by blood flowing out of the heart chamber.

6. The system of claim 5, wherein the distal portion of the guide member supports a balloon that is engaged by blood flowing out of the heart chamber.

7. The system of claim 6, wherein the guide member comprises a guide wire coupled to a catheter supporting the balloon, and the balloon pulls the catheter and the guide wire into the heart chamber.

8. A system for placing a guide member through the wall of a patient's heart so that the guide member extends through a coronary vessel and the wall of the heart into a heart chamber, the system comprising:

an introducer sized and configured for placement through the coronary vessel and wall of a patient's heart into a heart chamber; and

a guide member sized and configured to be passed through the coronary vessel and the heart wall into the heart chamber, the guide member having a proximal portion adapted to remain outside the heart and a distal portion adapted to be passed into the heart chamber;

wherein one of the introducer and the guide member is configured to direct the distal portion of the guide member to a predetermined location within the heart chamber upon introducing the guide member into the chamber.

9. A system for delivering a conduit into the wall of a patient's heart to communicate a coronary vessel with a heart chamber, the system comprising:

an introducer configured for placement through the heart wall and into a heart chamber;

a guide member sized and configured to be positioned in the introducer and placed through the heart wall into the heart chamber; and

a conduit sized and configured for placement in the wall of the heart so as to communicate the heart chamber with a coronary vessel, the conduit configured to be coupled to the guide member for delivery into the heart chamber and placement in the wall of the heart.

10. The system of claim 11 wherein the guide member is a guide wire.

11. The system of claim 9, wherein the guide member is coupled to the conduit by a detachable coupling mechanism.

12. The system of claim 11, wherein the conduit is supported by a delivery device that is coupled to the guide wire.

13. The system of claim 12, wherein the delivery device has a clamp for locking the delivery device to the guide wire.

14. The system of claim 12, wherein the delivery device has a support removably disposed within the conduit.

15. The system of claim 9, further comprising a device for removing the guide wire from the heart chamber.

16. A method for placing a guide member in a patient's heart so that the guide member extends through a coronary vessel and the wall of the heart into a heart chamber containing blood, the method comprising steps of:

- (a) passing a first end of a guide member through the coronary vessel and through the wall of the heart so that the guide member passes into the heart chamber containing blood;
- (b) maintaining a second end of the guide member outside the heart chamber; and
- (c) passing the first end of the guide member back out of the heart chamber.

17. The method of claim 16, wherein step (a) is carried out by passing a first end of the guide member through the vessel and the heart wall into the heart chamber and then passing the first end of the guide member back out of the heart chamber, wherein the first end of the guide member is then used to deliver the conduit.

18. The method of claim 17, wherein the first end of the guide member is passed through an opening in the heart wall and removed from the heart chamber.

19. The method of claim 18, further comprising introducing a snare through the heart wall into the heart chamber and grasping the guide member to remove the first end of

the guide member from the heart chamber.

20. ' The method of claim 16, wherein the first end of the guide member is configured to be forced out of the heart chamber by blood flow to pull the guide member out of the heart chamber.

21. The method of claim 20, wherein the heart chamber is the left ventricle and the first end of the guide member is forced into the aorta by blood flow and is then removed from the aorta.

22. The method of claim 16, further comprising using the guide member to deliver a tissue removal device into the heart chamber for use in removing tissue from the heart wall.

23. A method for placing a conduit in the wall of a patient's heart to establish a blood flow path between a coronary vessel and a heart chamber, the method comprising steps of:

(a) positioning a guide member that extends through the coronary vessel and the heart wall into a heart chamber;

(b) using the guide member to deliver a conduit into the heart chamber; and

(d) positioning the conduit in the heart wall to establish a blood flow path between the heart chamber and the interior of the vessel.

24. The method of claim 23, wherein step (a) is carried out by passing a first end of the guide member through the vessel and the heart wall into the heart chamber and then passing the first end of the guide member back out of the heart chamber, wherein the first end of the guide member is then used to deliver the conduit.

25. The method of claim 24, wherein step (b) is carried out by coupling the conduit to the first end of the guide member and then moving the first end of the guide member

and the conduit into the heart chamber.

26. The method of claim 25, wherein step (a) is carried out while maintaining a second end of the guide member outside the heart, and further comprising pulling the second end of the guide member to move the first end of the guide member and the conduit into the heart chamber.

27. The method of claim 24, wherein step (b) is carried out by sliding the conduit over the first end of the guide member and then along the guide member into the heart chamber.

28. The method of claim 23, further comprising removing the guide member from the heart chamber after the conduit has been positioned in the heart wall.

29. The method of claim 23, wherein the conduit comprises a stent movable between collapsed and expanded orientations, and step (c) is carried out by placing at least a portion of the stent in the heart wall and then moving the stent to its expanded orientation.

30. The method of claim 23, wherein the conduit is covered by a sheath, and further comprising covering at least a portion of the conduit while placing the conduit in the heart wall and then removing the cover.

31. The method of claim 23, wherein the coronary vessel is a coronary artery and the heart chamber is the left ventricle.

32. The method of claim 31, wherein the conduit is positioned in the heart wall so that the conduit extends into the lumen of the coronary artery and the interior of the left ventricle.